



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/692,468

10/22/2003

Qi-Bin Bao

79587

7253

22242 7590 12/17/2010  
FITCH EVEN TABIN & FLANNERY  
120 SOUTH LASALLE STREET  
SUITE 1600  
CHICAGO, IL 60603-3406

EXAMINER

LEVINE, JOSHUA H

ART UNIT

PAPER NUMBER

3774

MAIL DATE

DELIVERY MODE

12/17/2010

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/692,468	<b>Applicant(s)</b> BAO ET AL.	
	<b>Examiner</b> JOSHUA LEVINE	<b>Art Unit</b> 3774	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 25 June 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,4,11-27,29-31 and 33-54 is/are pending in the application.
- 4a) Of the above claim(s) 4,11-20,29,30 and 49-51 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3,21-27,31 and 33-48 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                    | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. This office action is responsive to the amendment filed on 06/25/2010. As directed by the amendment: claims 1, 33 and 42 have been amended, claims 2, 5-10, 28 and 32 have been cancelled, and no new claims have been added. Thus, claims 1, 4, 11-27, 29-31 and 33-54 are presently pending in this application.

### ***Response to Arguments***

2. Applicant's arguments filed 06/25/2010 have been fully considered but they are not persuasive.

Regarding claim 1, the applicant argues that the endplates of Ferree (PG Pub no. 20040030391) are not flat. The examiner affirms the rejection as Ferree disclosed that the endplates flatten in response to axial loads (paragraph 43).

The applicant argues that the inner arcuate sliding engagement is substantially entirely across the width of the respective shell bodies. The examiner affirms the rejection as figure 9A shows the width of the arcuate surfaces which can broadly be interpreted as substantially entirely extending the width of the implant.

Regarding claim 33, in response to applicant's arguments against the references individually that Casutt does not teach or suggest an intervertebral implant with an arcuate configuration, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Regarding claim 42, the applicant argues that Ferree and Casutt do not disclose or

Art Unit: 3774

teach a dome shape. The examiner affirms the rejection as figure 9A clearly shows a dome shape (see annotated figure 9A).

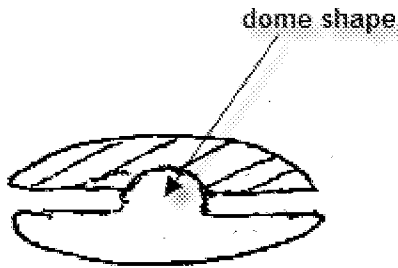


FIGURE 9A

***Claim Rejections - 35 USC § 112***

3. Claims 1, 33 and 42 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The limitation of the “inner, arcuate bearing surfaces of the one-piece bodies of the upper and lower shells that are in sliding engagement with each other each extending substantially entirely across the width of the respective shell bodies to the opposite sides thereof” is not supported in the instant specification.

***Claim Rejections - 35 USC § 102***

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

Art Unit: 3774

only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 3, 24-25, 27, and 52-54 are rejected under 35 U.S.C. 102(e) as being anticipated by Ferree (20040030391).

5. Regarding claim 1, Ferree disclosed a two-part prosthetic spinal nucleus device (figure 9A) replacing a nucleus of a spinal disc and being implanted in an intervertebral space within a natural intact annulus and between natural intact end plates attached to adjacent axially spaced upper and lower vertebral bones (figure 9D), the device comprising: a rigid upper shell (component; paragraph 49) having a one-piece elongate body having a predetermined length between opposite narrow ends and a predetermined width between opposite elongate sides and including a smooth outer surface having a flat configuration ( via axial loads, paragraph 43) for facing and non-invasively contacting the natural end plate of the upper vertebra for sliding engagement therewith (free to self center, paragraph 39) and sized to fit within the natural annulus of the spinal disc (closely matches the concavities of disc; paragraph 40) a rigid lower shell (component; paragraph 49) having a one-piece elongate body having a predetermined length between opposite narrow ends and a predetermined width between opposite elongate sides and including a smooth outer surface having a flat configuration (via axial load, paragraph 43) for facing and non-invasively contacting the natural end plate of the lower vertebra for sliding engagement therewith (free to self center, paragraph 39) and sized to fit within the natural annulus of the spinal disc (closely matches the concavities of disc (paragraph 40); inner, arcuate bearing surfaces of the one-piece bodies of the upper and lower shells that generally face are in engagement with each

Art Unit: 3774

other (components articulate with each other, paragraph 49) each other each extending substantially entirely across the width of the respective shell bodies to the opposite sides thereof (see figure 9A) see such that the inner, arcuate bearing surfaces have the widthwise size thereof maximized for distributing loading exerted by the adjacent vertebrae across substantially the entire width of the respective shell bodies; and the elongate sides of each of the shell bodies extending lengthwise between the narrow ends thereof so that the sides are longer than the width across narrow ends (oval shaped; paragraph 47; figure 4b) to allow the shells to be arranged with narrow ends of the shells shell bodies leading the shells as the shells are inserted through an incision smaller than the elongated sides of the shells shell bodies so that the natural annulus retains the shells in the intervertebral space with the smooth outer surfaces of the shell bodies extending continuously without interruption across the entire extent thereof between the ends and sides of the respective shell bodies (outer surface polished for articulation; paragraph 41).

6. Regarding claim 3, Ferree disclosed wherein the shell bodies are configured to be sequentially inserted through the incision in the annulus, and be assembled within the annulus (via two distinct spacer components; paragraph 49).

7. Regarding claim 24, Ferree disclosed engaging concave and convex bearing surfaces of the upper and lower shell bodies that bear against each other for substantially the entire arcuate extent thereof without discontinuities in the bearing surfaces (see figure 9a).

Art Unit: 3774

8. Regarding claim 25, Ferree disclosed wherein shell bodies include flat surface portions (inferior surface flat; paragraph 51) adjacent the concave and convex bearing surfaces portions.

9. Regarding claim 27, Ferree disclosed wherein one of the shell bodies includes a flat surface portion and the inner bearing surface of the one shell body is a concave surface portion recessed from the flat surface portion, and the other shell body includes a flat surface portion and the inner bearing surface of the other shell body is a dome surface projecting beyond the flat surface portion of the other shell body (see figure 9A)

10. Regarding claim 52, Ferree disclosed wherein the outer bearing surfaces are substantially race track shaped (oval shaped; paragraph 47; figure 4b) for allowing the bearing members to fit within the natural annulus.

11. Regarding claim 53, Ferree disclosed wherein the narrow ends of the shells each have an arcuate configuration and the elongate sides extend parallel to one another between the narrow ends (see figure 4B).

12. Regarding claim 54, Ferree disclosed wherein the smooth outer surfaces of the shells are entirely free of bone-engaging protrusions or surface roughening (via polishing; paragraph 41) to promote sliding engagement of the bearing members with the end plates such that the nucleus device is allowed to move freely along the endplates within the annulus.

***Claim Rejections - 35 USC § 103***

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 3774

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claims 21-23 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ferree (20040030391) in further view of Ferree (PG Pub no. 20030204260).

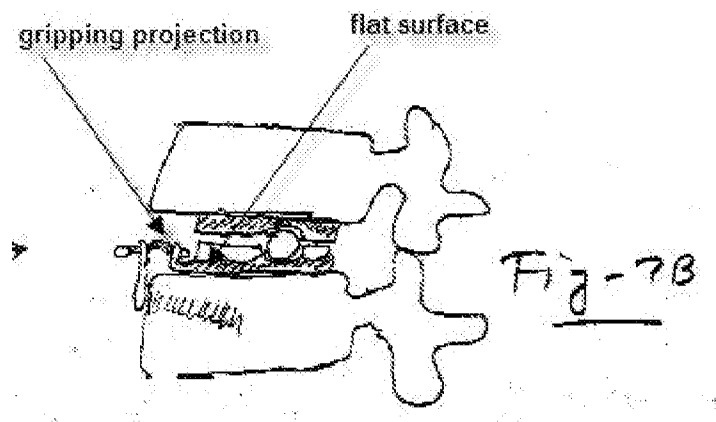
15. Regarding claim 21-23, Ferree disclosed all the elements of the claim except for at least one of the shells includes a gripping projection integral with the body of the one shell configured to allow a separate tool to grip around the projection for tool insertion of the shells through the annulus incision into the intervertebral space and shifting of the shells therein so that the narrow shell ends are not aligned with an insertion direction of the shells through the incision.

Ferree (PG Pub no. 20030204260) teaches shells (intradiscal device; figure 7B) that includes a gripping projection (see annotated figure 7B) integral with the body of the one shell configured to allow a separate tool to grip around the projection for tool insertion of the shells through the annulus incision into the intervertebral space and shifting of the shells (controlled range of motion (paragraph 41) wherein the gripping projection comprises a gripping post of the at least one of the upper and lower shells that projects from the one shell toward the other of the upper and lower shells (see annotated figure 9) and wherein the gripping projection includes an arcuate engagement surface for rotating the one shell with the tool (via swivel feature; paragraph 42, figure 6) and a generally flat abutment surface (via anterior portion; paragraph 43) for locking the one shell against rotation with the tool. It would have been obvious to one of ordinary skill in the art at the time of the invention to include the grip projection with an arcuate



Art Unit: 3774

engagement surface and flat abutment surface for the purpose of providing an intradiscal device with the ability to self center while remaining safely inside the annulus (paragraph 14).



16. Regarding claim 26, Ferree teaches wherein the flat surface portion of one of the shell bodies includes an integral gripping post projecting away therefrom (see annotated figure 7B).

17. Claims 31, 33-44 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ferree (20040030391) and alternately Ferree (20040030391) in further view of Casutt (PG Pub no. 20030045939).

18. Regarding claims 31 and 48, Ferree disclosed all the elements of the claim including the members constructed from polymer (paragraph 9) except for wherein the bodies of the rigid upper shell and the rigid lower shell are entirely of a polyetheretherketone (PEEK) material. It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the polymer of PEEK for the purpose of providing a biologically acceptable material with elastic or spring like properties (paragraph 9), since it has been held to be within the general skill

Art Unit: 3774

of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

Additionally, Casutt teaches endplates that are made from PEEK (paragraph 29).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the rejection to include the PEEK of Casutt for the purpose of providing a high performance polymer.

19. Regarding claim 33-44, see claims 1 and 31.

20. Claims 45-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ferree (20040030391) in further view of Ferree (PG Pub no. 20030204260) and alternatively Ferree (20040030391) in further view of Ferree (PG Pub no. 20030204260) in further view of Casutt (PG Pub no. 20030045939).

### ***Conclusion***

21. This is a request for continuing examination of applicant's earlier Application No. 10692468. All claims are drawn to the same invention claimed in the earlier application and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the earlier application. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action in this case. See MPEP § 706.07(b).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

Art Unit: 3774

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no, however, event will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOSHUA LEVINE whose telephone number is (571)270-5413. The examiner can normally be reached on Monday-Thursday 7:30am-5:00pm ETA.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Isabella can be reached on 571-272-4749. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. L./  
Examiner, Art Unit 3774

/DAVID ISABELLA/  
Supervisory Patent Examiner, Art  
Unit 3774